

# EMS: Services backstage – Added Value Under the Radar





**EMS: Services *backstage* – Added Value under the Radar**

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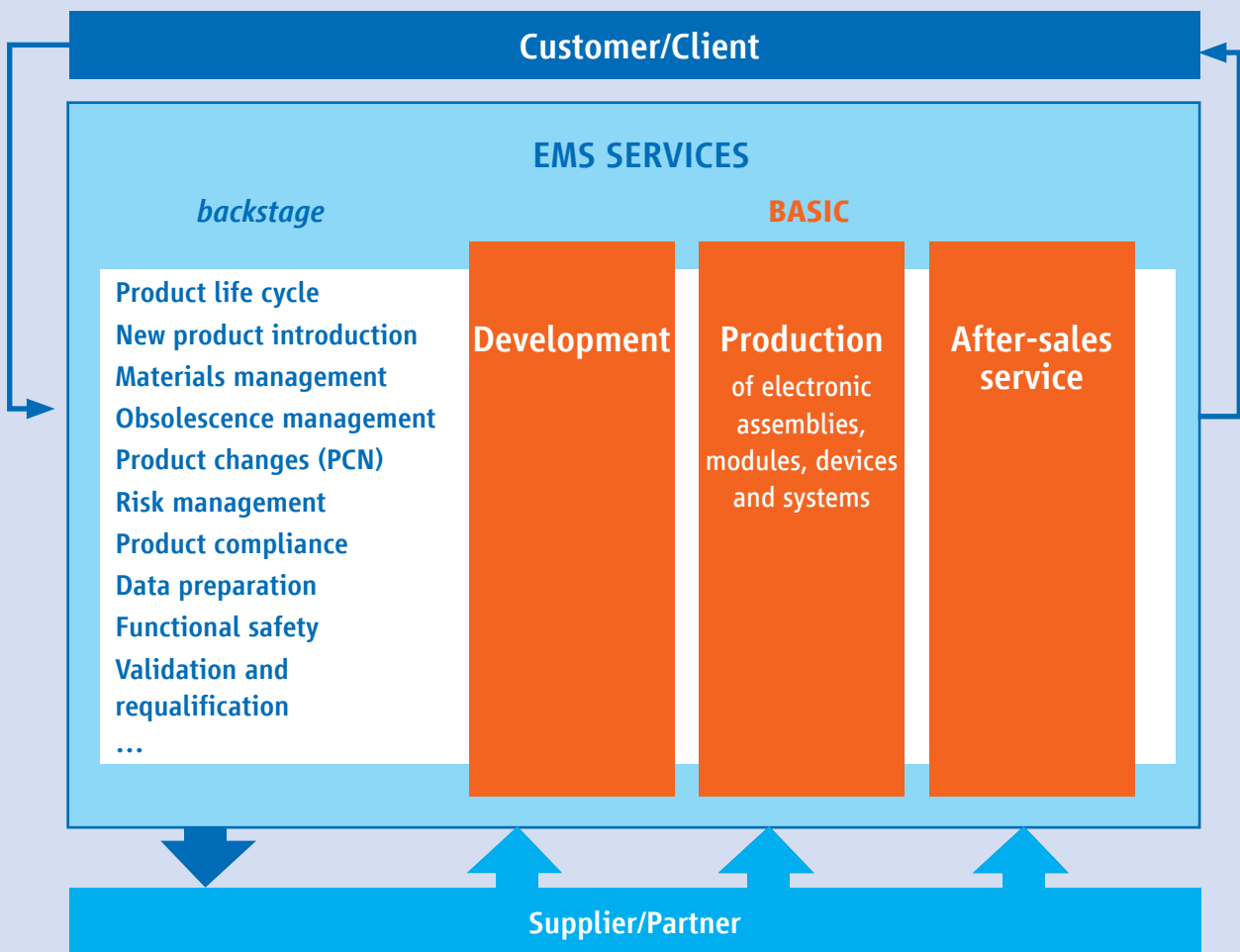
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# EMS backstage

Beyond the traditional EMS basic services – the three pillars of “development, production and after-sales service” – there are a number of processes running in the background – backstage services – that must be performed and organised. Coordination of “who must deliver what?” between customers and EMS partners is necessary and

must be custom ordered. This helps avoid serious consequences arising from a lack of services or services that are asynchronously performed by both parties. Responsibility is controlled and assigned. However, product responsibility always resides with the IP owner.

## Interplay between basic services and additional backstage services from the EMS partner



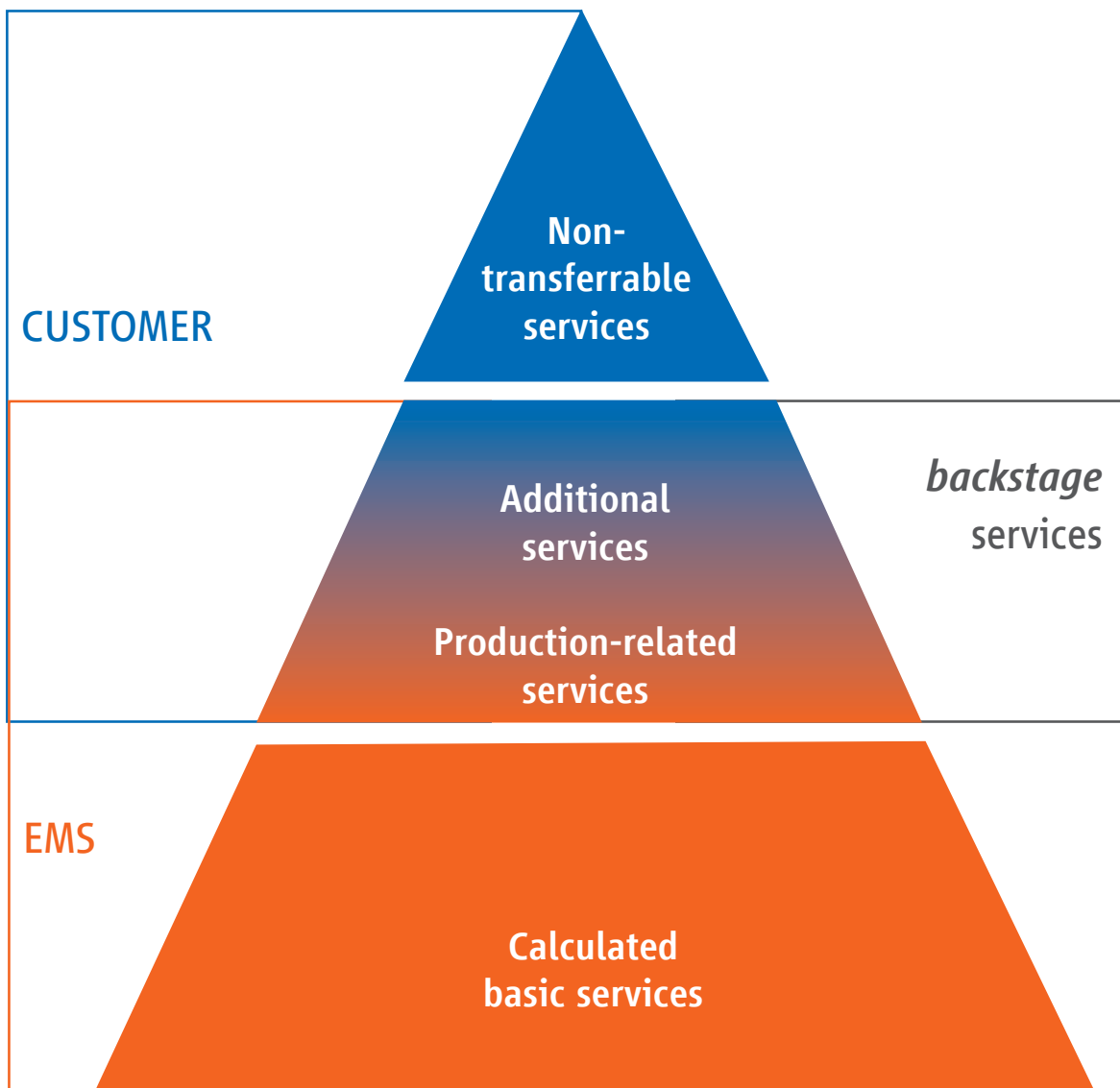
# Overview of Services

Today's modern EMS companies have typically evolved from contract manufacturers. These origins are reflected in the traditional costing methods used by EMS companies. Such methods include original services like development, manufacturing and after-sales support in different categories and are at the core of every calculation.

As they have evolved, EMS companies have taken over more and more tasks that developed around traditional services and that are not always immediately apparent (backstage services). These additional services include DfX, traceability, materials management, obsolescence management,

product compliance, product changes, risk management etc., for example, and are not a part of services calculated via standard methods. They must be coordinated between the customer and the EMS partner prior to submitting a tender. It is important to define who is responsible for what, who will perform which service and who will bear the costs.

Moreover, there are other services that cannot be transferred to EMS companies, such as IP ownership, customer warranties etc. The customer is always responsible for providing these services.

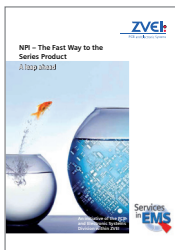


# Established *backstage* Services



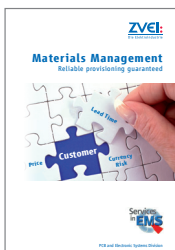
## PLM – Product lifecycle management

- Products must receive specific support in every phase of the life cycle, starting with the concept phase.
- The EMS partner professionally executes processes such as materials management, tests, repairs, change and update services, obsolescence management logistics, redesign, long-term storage etc., as specified in the contract.
- PLM provides support for all product life cycles according to the individual situation and ensures availability and quality while reducing costs.



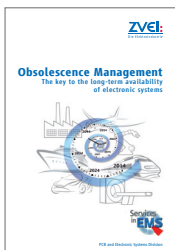
## NPI – New product introduction

- Time-to-market leaves no room for trial and error. The first development design must fit.
- Alongside design, functionality and operability, the preliminary design must also consider the circumstances of production, quality assurance, material supply and much more.
- Design for Excellence (DfX) is a toolbox that is used in a comprehensive way early on. DfX consolidates all of the specifications required to produce assemblies and systems in every phase of a project in order to serve the market with products that are both cost-effective and of sufficient quality.



## Materials management

- Materials management plays a key role in electronics as the share of materials is generally significantly higher than the value added.
- Materials management is more than just “purchasing”. From the selection of components to the logistics concept, we ensure optimum security of supply, quality and, not least, the lowest possible costs.
- As an expert partner, we take care of supplier selection and management for you.
- In the event of allocation or obsolescence, we help you find the best possible solution for your product.



## Obsolescence management

- The market is forcing suppliers to provide more efficient, easier-to-operate and affordable applications.
- This technological change means that product cycles are growing shorter and shorter.
- For any number of reasons, what was the latest trend yesterday may either no longer be directly available or possibly even discontinued today.
- Product material availability requires management.
- It is important for customers to contract EMS partners with obsolescence management services in order to ensure their products remain available long term.



### Downloads:

<http://www.zvei.org/services-in-ems>

# Product Change Notification (PCN)

Product manufacturers use product change notifications (PCNs) to inform their customers of technical changes to a product. These changes can impact every aspect of production: Relocating production, converting production processes, changes in components or formulas, impending obsolescence.

**PCNs:**  
Rapidly increasing number:

Year	PCN Count (approx.)
2014	20
2015	50
2016	100

Qualification of information:  
info only until redesign/replacement

Variety of forms:  
Internet, phone, email, letter,  
data sheet, catalogue, ...

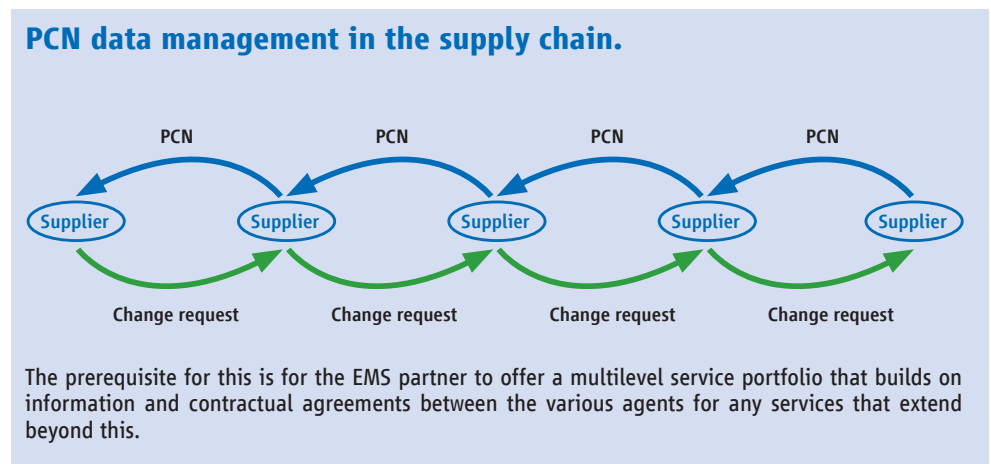
**EMS partner services:**

Evaluation, processing and channelling the data flow

Data preparation

Challenges: Quantity, Complexity, Time, Format

Objective: Standard format



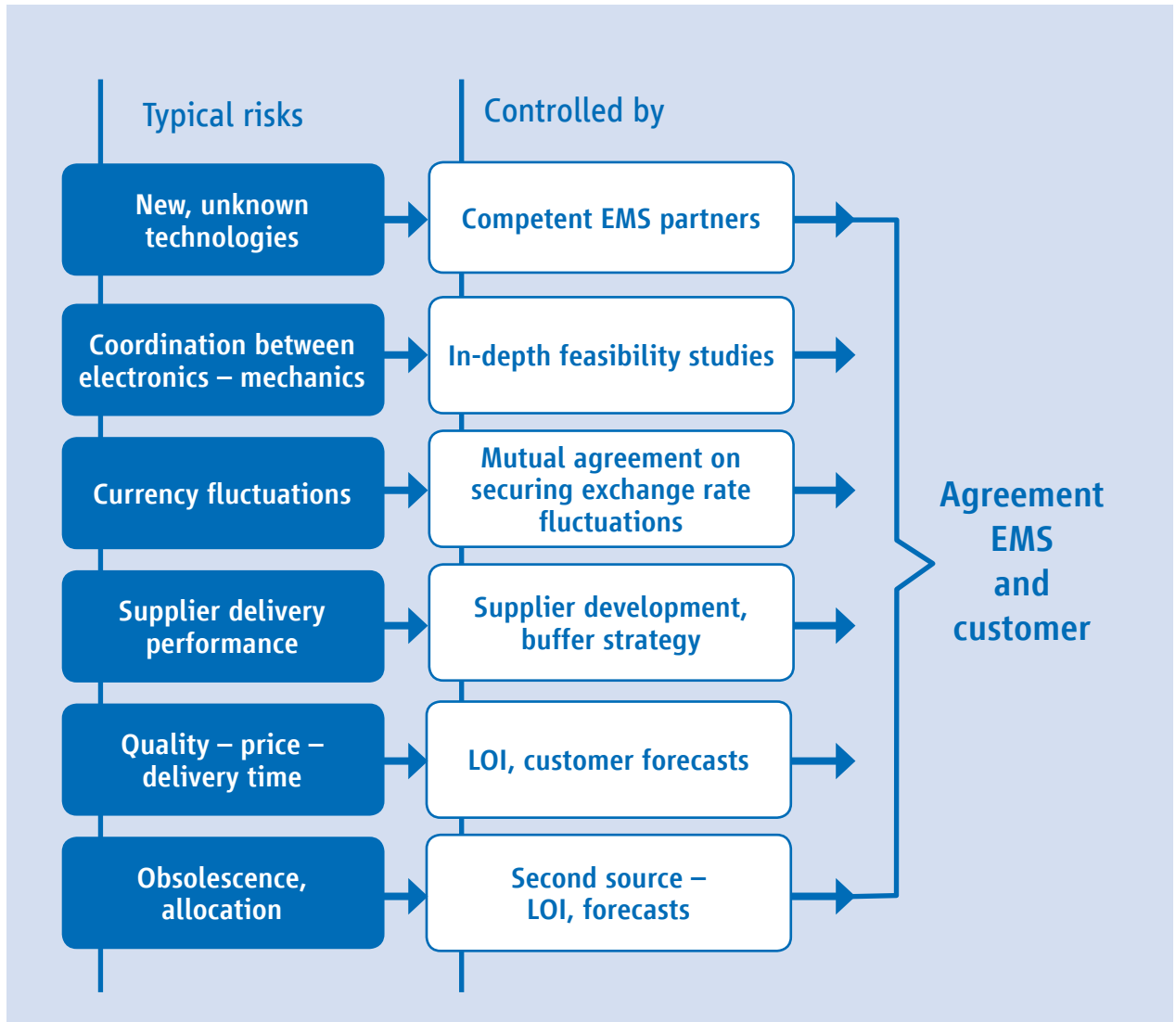
**Previously released information on this subject:**

- ZVEI brochure: Obsolescence Management – The key to long term availability of electronic systems
- ZVEI Product-process Change Notification Guideline For Automotive Electronic Components

# Risk Management

Risk management controls the measures designed to avoid and reduce risks, such as

- risks not identified by the customer
- foreign exchange risks
- supplier risks
- logistics risks



# Product Compliance

- Product compliance means meeting all applicable legal and normative specifications so that a product can be marketed in a certain country or region.
- This generally impacts:
  - Electromagnetic compatibility
  - Product safety
  - Ecology (energy consumption, material restrictions such as REACH, ROHS)
  - Behaviour under certain environmental conditions (climate, mechanical and acoustical tests)
  - Radio properties and/or wireless transmission (WiFi, Bluetooth)
- Proof of product compliance can be provided via standardised testing methods.
- Results are presented in reports.
- The reports can be used to obtain the necessary certificates or, as required in Europe, ensured by means of a “supplier self-declaration”.
- We recommend working with an ISO/IEC 17025-certified or accredited laboratory for testing and reporting.

## Implementation example using substance compliance

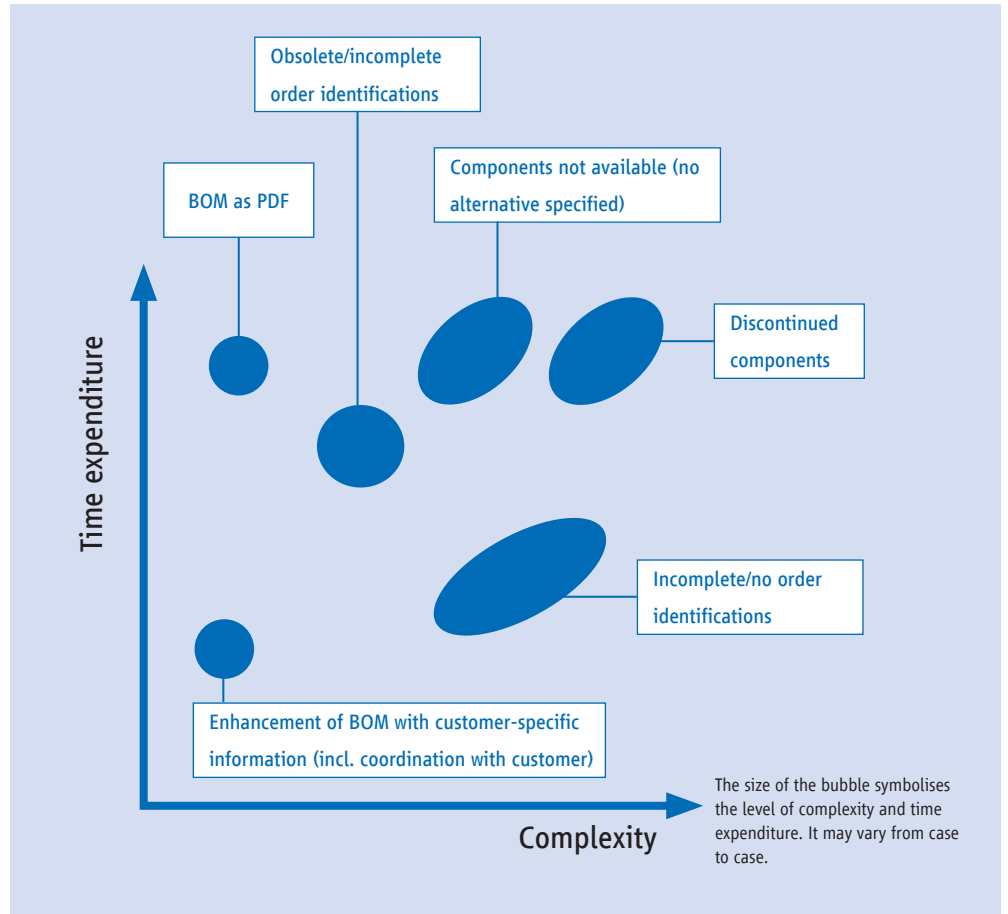
Assignment/task	Objective/result	EMS	Customer
Legal requirements	Relevant EU guidelines: REACH, RoHS, ELV		
Additional customer requirements	Conflict minerals		
Prepare tender	Encompassing the presentation of all compliance requirements and responsibilities and competencies including release procedures		Order
Product development and design	Appropriate IC selection and presentation in drawing set and bills of materials		Release
Process development and NPI	Appropriate control plan with monitoring and testing		Release
Supplier qualification and monitoring	Agreement on information/declaration of critical substances, PCN, supplier audits, certificates		Release
Logistics	Purchasing with special order text, expanded incoming goods inspection, special material identification		Release
Production	In accordance with control plan with material, process and validation data capturing		Order
QM	Product and process audits, conformity declarations		Order
Support	Management of external tests and certifications, OM, PLM		Order



# Data Preparation

The challenge lies in the level of complexity and the wide range of bills of materials (BOM). This requires dedicated and in-depth

knowledge on the part of specialists who work for the EMS Partner.



### Resulting activities for EMS partner specialists:

Manual transfer of data	Compatibility (pre)testing for alternative components	Manual research in the event of inconsistent data	Clarification with supplier/manufacturer
Inspection of data	Clarification with the customer	Research of adequate alternative components	Enrichment of information (as necessary)

# Functional Safety

Often, within the scope of the services the EMS partner provides, the underlying service package may feature requirements that at first glance have little to do with the EMS world.

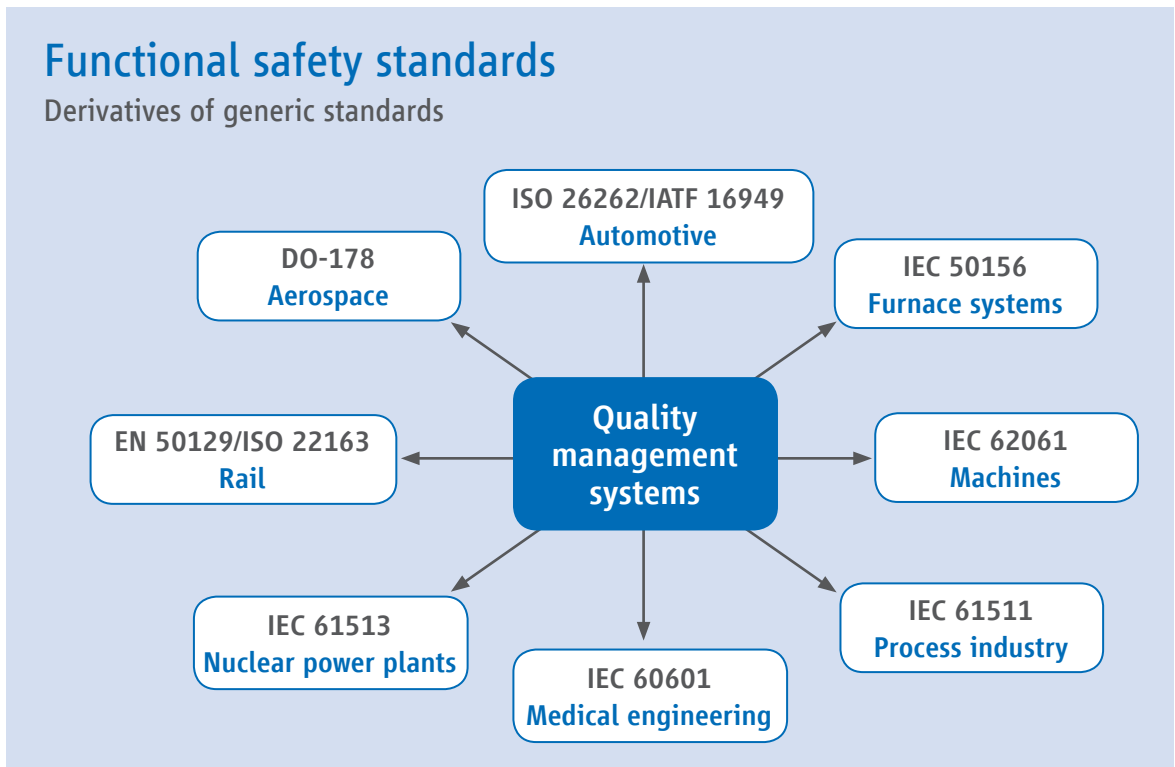
However, this changes quickly upon closer examination of the details – as is the case with safety-related issues in the automotive, medical engineering, aerospace and other business sectors.

Unfortunately, these requirements are not explicitly tailored to our industry, which allows for interpretation on the one hand, but also transfers a responsibility that should not be underestimated.

This makes it imperative to ensure that all of the EMS partner’s processes feature the “interfaces” required in order to query the necessary requirements and define and finalise these across all of the processes.

It is not merely an objective; it is absolutely **essential** to present the corresponding proof at the end of the process and to provide this to the customer for further use or examination.

The number of tasks and the required systems no less represent commensurate value creation, even if only indirectly apparent – without it, however, compliant EMS service would not be possible.



# Validation and Requalification

## Task assignment:

A key feature of new product development is the ability to meet product specifications and applicable standards. Then proof of product compliance can be provided. Validation must cover the following aspects:

- Product functionality
- Product environmental influences
- Product lifetime
- Electromagnetic compatibility

In series production, the product quality is requalified using shortened test cycles that are performed annually. In the automotive industry, this is generally prescribed by the OEMs.

## EMS partner services:

- Evaluation of general standards and customer specifications
- Creation of test specifications => customer release required
- Provisioning of test equipment
- Performance of tests
- Analysis of results and preparation of test reports
- Performance of optimisations

## Customer benefits:

Product development with integrated validation offers the following advantages:

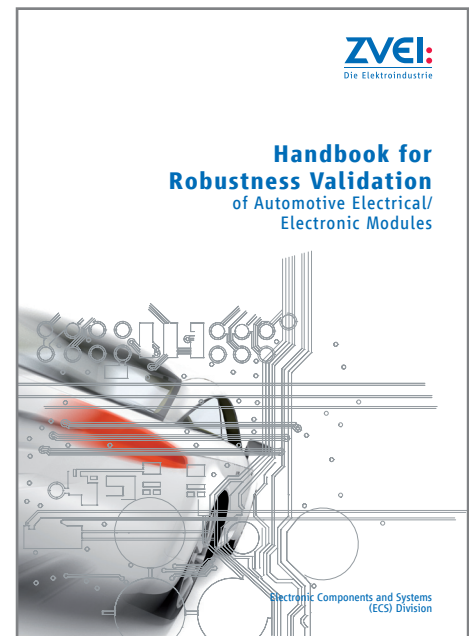
- Shortened development lead times and thus faster time-to-market
- Fewer interfaces and risks
- More consistent product quality in series production

In series production, the EMS partner ensures that the products continuously meet the quality requirements and standards.

A contractually agreed scope of service is the prerequisite for successful project implementation.

Basic product validation principles and methods are presented in the ZVEI Robustness Validation handbook:

<https://www.zvei.org/en/subjects/mobility/robustness-validation-general/>



# The Following ZVEI Members ...

- Offer services tailored to customers' requirements.
- Are committed to quality and environment management.
- Have the expertise required to perform the services.
- Determine the desired results and performance indicators together with the customer.



## ZVEI:

Die Elektroindustrie

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